

IN THE DRAWINGS

The attached 2 sheets of drawings includes changes to Figs. 1, 2 and 3. These sheets, which include Figs. 1, 2 and 3, replace the original sheets including Figs. 1, 2 and 3.

Attachment: Replacement Sheets(2)

Annotated Sheets (3)

SUPPORT FOR THE AMENDMENTS

The specification is amended to include headings according to 37 C.F.R. § 1.77 and text providing a brief description of the drawings.

The paragraphs on pages 6 and 7 are amended to provide description consistent with the replacement drawings.

Claims 1-4 are amended to use wording and structure consistent with U.S. patent law practice.

Claim 5 is amended to be stated in independent form. Support is found in Claim 1 from which Claim 5 originally depended.

Claims 6, 7 and 8 are amended to use wording and structure consistent with U.S. patent law practice.

Claims 10 to 15 are new and are supported by the original claims. Support for Claims 14 and 15 is found on page 8, lines 20-26, in the specification.

No new matter is believed added to this application by entry of this amendment.

Upon entry of this amendment, Claims 1-15 are active.

REMARKS/ARGUMENTS

The claimed invention is directed to a process for separating a C₂ to C₄ vinyl ether from a C₂ to C₄ alcohol obtained in vinyl ether synthesis mixtures via distillation. A distillation method to separate such mixtures which efficient, convenient and allows high plant production capacity without risk of contamination by added extraneous chemical auxiliaries is sought.

The claimed invention addresses this problem by providing the distillative process described in Claims 1 and 5 and claims dependent thereon. No such process is disclosed or suggested in the cited references.

Applicants wish to thank Examiner Manoharan for the indication that Claims 5-9 would be allowable if written in independent form including all of the limitations of the base claim and any intervening claims. Claim 5 is herein amended to independent form as described and new claims 10, 11, 12, 13 and 15 directly or indirectly depend from Claim 5.

The rejection of Claims 1-4 under 35 U.S.C. 103(a) over JP 10-109952 with or without Tanaka et al. (U.S. 3,878,058) is respectfully traversed.

JP 10-109952 describes a method for separating cyclohexyl vinyl ether from cyclohexanol. These materials are C₆ radical molecules and are cyclic in structure.

In contrast, the claimed invention is directed to the separation of alcohols and vinyl ethers which are C₂ – C₄ radical molecules. Applicants have described that the materials according to the claimed invention are not separable by simple distillation on page 1, lines 26-34, of the specification.

“In addition to the catalyst and possible by-products, the reaction mixture formed comprises mainly the vinyl ether formed and the unconverted alcohol. The two latter components, apart from the C₁ derivatives, methyl vinyl ether/methanol, cannot be separated by simple distillation into fractions of the desired purity as a consequence of azeotrope formation. This problem has hitherto been solved by the use of extraction and extraction distillation processes, in which one or more extraneous substances are added as auxiliaries and then removed again after separation into a vinyl ether- and an alcohol-containing fraction.”

The Office has acknowledged that JP' 952 does not disclose separating the mixtures according to the claimed invention (Official Action dated June 26, 2008, page 4, lines 10-15) and alleged that “such difference does not constitute a patentable distinction.”

However, Applicants respectfully disagree and submit that success in separation of liquids which form azeotropic mixtures is not necessarily predictable from one system of alcohol/vinyl ether to another. Tanaka does not even mention distillation as a viable method for separating mixtures which are “hardly separable by mere rectification treatment due to the azeotrope or the close boiling point.” (Abstract and Col. 1 lines 1-32)

Tanaka addresses the problem of separation of such mixtures by adding a third component and then employing a method of extractive distillation.

In a Precedential Opinion rendered by the Board of Patent Appeals and Interferences in *Ex parte* Whalen II (Appeal 2007-4423, Application 10/281,142) on July 23, 2008, the Board stated:

“The KSR Court noted that obviousness cannot be proven merely by showing that the elements of a claimed device were known in the prior art; it must be shown that those of ordinary skill in the art would have had some “apparent reason to combine the known elements in the fashion claimed.””

“The Examiner has not persuasively explained why a person of ordinary skill in the art would have had a reason to modify the compositions taught by Evans, Greff 767, or Taki in a way that would result in the compositions defined by the claims on appeal. Therefore, The Examiner has not made out a prima facie case of obviousness under 35 U.S.C. § 103.”

Applicants respectively submit that one of ordinary skill in the art at the time of the invention would not have been motivated to apply the method of JP’ 952 to the mixtures described in Tanaka as conventional wisdom taught these mixtures were not separable by simple distillation. In addition, Applicants respectfully submit that the Office has not persuasively explained why a person of ordinary skill in the art would have applied the process of JP’ 952 to the mixtures described in Tanaka in view of the stated conventional wisdom that taught these mixtures were not separable by simple distillation.

Moreover, Applicants respectfully submit that JP’ 952 describes that the inner pressure of the first distillation tower is 5-100 mmHg and the inner pressure of the second distillation tower is 50-760 mmHg (English abstract). Accordingly, this reference does not require that the second distillation column be operated at a pressure which is from 0.01 to 3 MPa higher compared to the first distillation column as in the claimed invention.

Applicants respectfully call the Examiner's attention to the following excerpt from the Office's own discussion of **"Examination Guidelines for Determining Obviousness Under 35 U.S.C. 103 in View of the Supreme Court Decision in *KSR International Co. v. Teleflex Inc.*"**

"The rationale to support a conclusion that the claim would have been obvious is that all the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination would have yielded nothing more than predictable results to one of ordinary skill in the art at the time of the invention."⁴³ "[I]t can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does."⁴⁴ **If any of these findings cannot be made, then this rationale cannot be used to support a conclusion that the claim would have been obvious to one of ordinary skill in the art,**" (Federal Register, Vol. 72, No. 195, page 57529) **(Bold added)**

As discussed above, Applicants respectfully submit that all the claimed elements are not described in the cited references and the Office has not persuasively explained why a person of ordinary skill in the art would have applied the process of JP' 952 to the mixtures described in Tanaka in view of the stated conventional wisdom that taught these mixtures were not separable by simple distillation.

Accordingly, Applicants respectfully submit that a conclusion of obviousness cannot be supported and withdrawal of the rejection of Claims 1-4 under 35 U.S.C. 103(a) over JP 10-109952 with or without Tanaka is respectfully requested.

Applicants respectfully submit that the objections to the drawings are addressed and corrected in the replacement figures accompanying this paper. Withdrawal of the objections to the drawings is therefore respectfully requested.

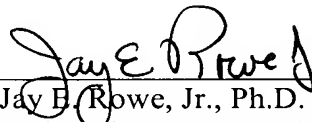
The objection to the disclosure is addressed in the amendments to the specification herein. Headings including a Brief Description of the Drawings and appropriate description are herein added to the specification.

The rejection of Claims 1-9 under 35 U.S.C. 112, second paragraph is believed obviated by appropriate amendment. The claims are herein amended to use wording and structure consistent with U.S. patent law practice. Claim 8 is herein amended to more clearly describe the claimed invention.

Applicants respectfully submit that the above-identified application is now in condition for allowance and early notice of such action is earnestly solicited.

Respectfully submitted,

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